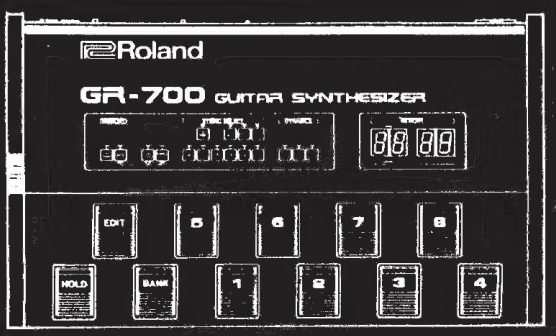
Roland

OWNER'S MANUAL

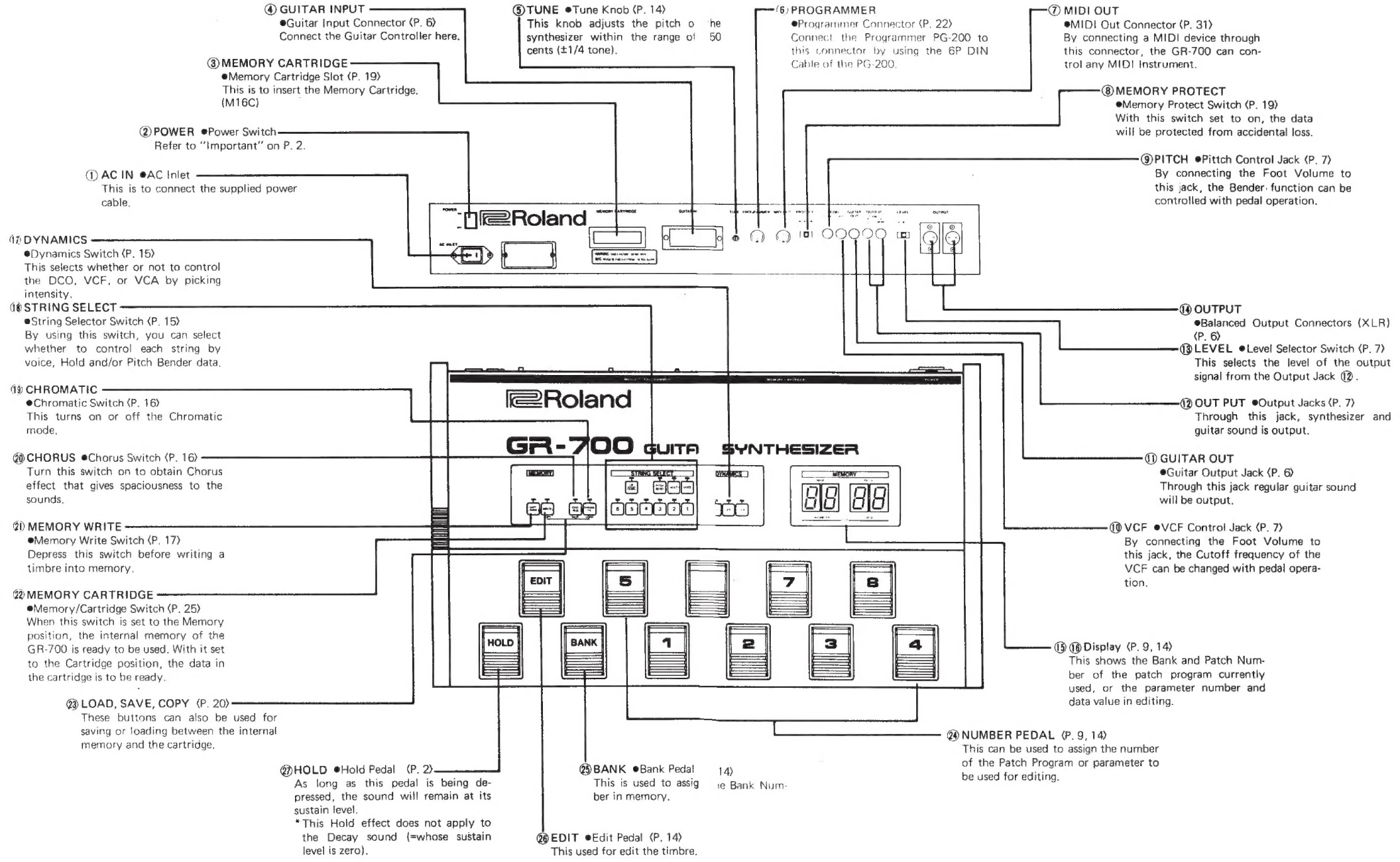
GUITAR SYNTHESIZER

GR-700



Contents

[1] Panel Description 3,4
[2] Connection 6
(1)Guitar 6
(2)Amplifier 6
(3)Control Pedal 7
[3] Operation 8
★ Outline of the GR-700 ★ 8
(1)Recalling a Patch 8
Number Pedal, Bank Pedal 9
(2)Hold 10
(3)Guitar Controller 10
a. Balance 10
b. Master Volume 10
c. Mode Switch 11
d. Vibrato Knob and
e. Touch Plate 11
f. Cutoff Frequency and
g. Edit knob 11
(4)Edit 12
a. Edit Pedal 12
b. Selecting a Parameter 12
c. Edit Map 12
d. Setting the Data Value 13
e. Editing Cutoff Frequency . . 13
f. Completion of Editing 14
■ Tuning ■ 14
(5)Panel Switches 15
a. Dynamics Switch 15
b. String Selector Switch 15
c. Chromatic Switch 16
d. Chorus Switch 16
e. Memory Cartridge Switch . . 16
f. Memory Write Switch 16
(6)Write 17
a. Memory Write Switch 17
b. Rearrangement of Patches . . 18
[4] Memory Cartridge 19
a. Memory Cartridge Slot 19
b. Memory Cartridge Switch . . 19
c. Copy, Save, Load 20
[5] Problems caused by your improper playing manner 21
[6] Programmer PG-200/Synthesizer Section of GR-700 22
DCO 24
VCF 27
VCA 28
LFO 29
ENV 30
[7] MIDI 31
Specifications/Option 32
★ Adjusting the output level of the Guitar Controller 33


④ GUITAR INPUT
●Guitar Input Connector ⟨P. 6⟩
Connect the Guitar Controller here.
⑤ TUNE ●Tune Knob ⟨P. 14⟩
This knob adjusts the pitch o he synthesizer within the range of 50 cents (±1/4 tone).
⑥ PROGRAMMER
●Programmer Connector ⟨P. 22⟩
Connect the Programmer PG-200 to this connector by using the 6P DIN Cable of the PG-200.
⑦ MIDI OUT
●MIDI Out Connector ⟨P. 31⟩
By connecting a MIDI device through this connector, the GR-700 can control any MIDI Instrument.
③ MEMORY CARTRIDGE
●Memory Cartridge Slot ⟨P. 19⟩
This is to insert the Memory Cartridge. (M16C)
⑧ MEMORY PROTECT
●Memory Protect Switch ⟨P. 19⟩
With this switch set to on, the data will be protected from accidental loss.
② POWER ●Power Switch
Refer to "Important" on P. 2.
⑨ PITCH ●Pitch Control Jack ⟨P. 7⟩
By connecting the Foot Volume to this jack, the Bender function can be controlled with pedal operation.
① AC IN ●AC Inlet
This is to connect the supplied power cable.
⑰ DYNAMICS
●Dynamics Switch ⟨P. 15⟩
This selects whether or not to control the DCO, VCF, or VCA by picking intensity.
⑭ OUTPUT
●Balanced Output Connectors (XLR) ⟨P. 6⟩
⑬ LEVEL ●Level Selector Switch ⟨P. 7⟩
This selects the level of the output signal from the Output Jack ⑫.
⑱ STRING SELECT
●String Selector Switch ⟨P. 15⟩
By using this switch, you can select whether to control each string by voice, Hold and/or Pitch Bender data.
⑫ OUT PUT ●Output Jacks ⟨P. 7⟩
Through this jack, synthesizer and guitar sound is output.
⑲ CHROMATIC
●Chromatic Switch ⟨P. 16⟩
This turns on or off the Chromatic mode.
⑪ GUITAR OUT
●Guitar Output Jack ⟨P. 6⟩
Through this jack regular guitar sound will be output.
⑳ CHORUS ●Chorus Switch ⟨P. 16⟩
Turn this switch on to obtain Chorus effect that gives spaciousness to the sounds.
⑩ VCF ●VCF Control Jack ⟨P. 7⟩
By connecting the Foot Volume to this jack, the Cutoff frequency of the VCF can be changed with pedal operation.
㉑ MEMORY WRITE
●Memory Write Switch ⟨P. 17⟩
Depress this switch before writing a timbre into memory.
㉒ MEMORY CARTRIDGE
●Memory/Cartridge Switch ⟨P. 25⟩
When this switch is set to the Memory position, the internal memory of the GR-700 is ready to be used. With it set to the Cartridge position, the data in the cartridge is to be ready.
⑮⑯ Display ⟨P. 9, 14⟩
This shows the Bank and Patch Number of the patch program currently used, or the parameter number and data value in editing.
㉓ LOAD, SAVE, COPY ⟨P. 20⟩
These buttons can also be used for saving or loading between the internal memory and the cartridge.
㉔ NUMBER PEDAL ⟨P. 9, 14⟩
This can be used to assign the number of the Patch Program or parameter to be used for editing.
㉗ HOLD ●Hold Pedal ⟨P. 2⟩
As long as this pedal is being depressed, the sound will remain at its sustain level.
*This Hold effect does not apply to the Decay sound (=whose sustain level is zero).
㉕ BANK ●Bank Pedal
This is used to assig ber in memory.
14⟩
ie Bank Num-
㉖ EDIT ●Edit Pedal ⟨P. 14⟩
This used for edit the timbre.
Roland
GR-700 GUITA SYNTHESIZER
EDIT
HOLD
BANK
1
2
3
4
5
7
8

Important

The GR-700 is designed to be used specifically with the Roland G-series Guitar Controllers for most integrated guitar synthesizer system.

★If the output level of the Guitar Controller is not appropriate, the following troubles may be caused.

▶**Exessive Output Level**
When played hard, the pitch gets unstable.
The sound of irrelevant strings are heard.
Response is late.

▶**Unsufficient Output Level**
There is no sound heard unless you play the guitar hard.
The sound does not last.

If you are annoyed by the above troubles, adjust the output level as instructed in "Adjusting the output level of the Guitar Controller" on P.33. If those still remain even after adjustment, refer to "[5] Problems caused by your improper playing manner" on P. 21.

Power Supply

- The appropriate power supply for this unit is shown on its name plate. Please make sure that the voltage system in your country meets that.
- Please use the different socket than the one used for the noise generating device (such as monitor, variable lighting system).
- When setting up the GR-707 with an external amplifier or the Guitar Controller, turn both of them off.
- This unit might not work properly if turned on immediately after turned off. If this happens, simply turn it off and turn it on again a few seconds later.
- This unit might get hot while operating, but there is no need to worry about it.

Location

- Operating the GR-700 near a neon or fluorescent lamp may cause noise interference. If so, change the angle of the GR-700.
- Avoid using the GR-700 in excessive heat or humidity or where it may be affected by direct sunlight or dust.

Cleaning

- Use a soft cloth and clean only with a neutral detergent.
- Do not use solvents such as paint thinner.

Repairing

- Save the necessary data onto a tape or cartridge before having the GR-700 repaired, in case it happens to be erased accidentally.

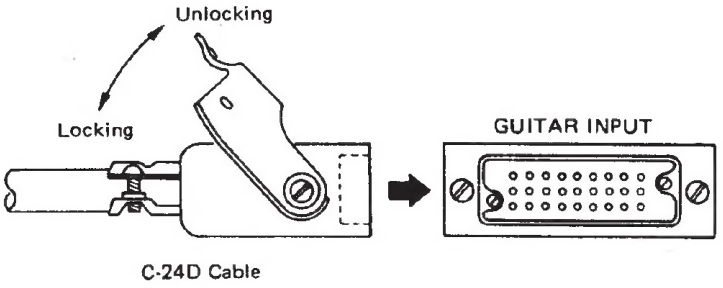
Features

- Processing the vibration of each string by computer and controlling its synthesizer section, the GR-700 can express even subtle playing technique.
- Even during live performance, the current tone color can be easily edited by using Pedal Switch and guitar's controls, without reaching your hands.
- By using the PG-200 Programmer (optional), even wider variety of tone color creation is obtained.
- The Memory Cartridge allows expansion of the Memory Capacity. (up to 64)
- In its Chromatic mode, Chromatic Scale is obtainable.
- A large LED Display, dust-proof switches, improve accuracy and durability.
- Provided with Remote Control function for DCO and VCF, and Stereo Chorus, etc, wide variety of synthesizing is available.
- The MIDI Out allows the GR-700 to control any MIDI instrument.

(1) Guitar

The GR-700 can be set up with any of the Guitar Controller G Series, but the G-707 is the best option to fully benefit the advantages of the GR-700.

For setting up, use the supplied connection cable C-240. Also, be sure to make all the connections with the units off.

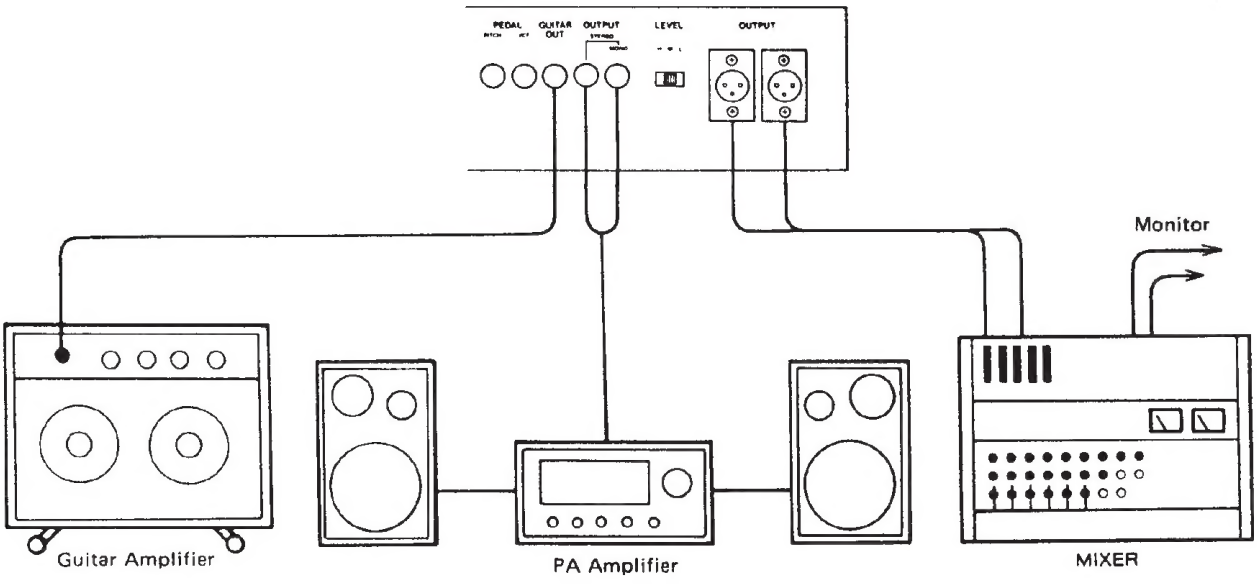


(2) Amplifier

If you use only the Output Jack ⑫, mixed sound of direct guitar and synthesizer will be obtained. If using two amplifiers (stereo), Chorus effect will sound more effective. Select an appropriate output level with the Level Selector Switch ⑬ depending on the type of the amplifier you use. (The knack is to select the position that allows desirable volume with the amplifier's volume and the Master volume set to 5 to 7)

Through the Guitar Output Jack ⑪, only direct guitar sound is sent out. The output level is about the same as that of an usual electric guitar. If both this jack and Output Jack ⑫ are used at the same time, only the synthesizer sound is output through the Output jack ⑫.

The natures of the guitar and the synthesizer sound are quite different, so it is better to use an appropriate amplifier or speaker respectively.



▶For Synthesizer Output
Keyboard Amplifier, Monitor Amplifier Vocal Amplifier, PA or Audio Equipment.

▶For Guitar Output
Guitar Amplifier

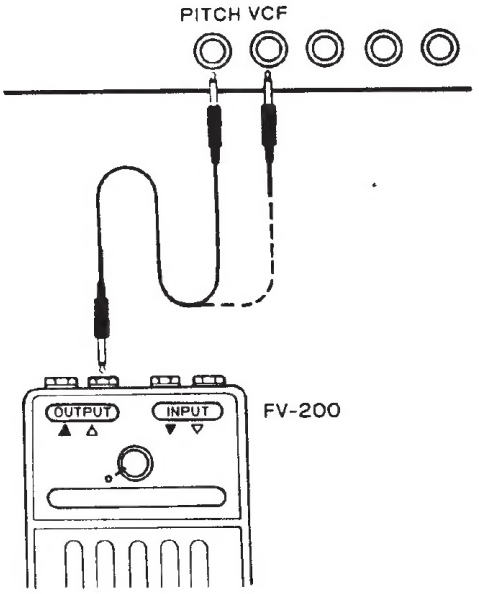
* It is possible to use the Normal Out of the Guitar Controller to output direct guitar sound, but using the Guitar Out of the GR-700 will make the operation more comfortable.

The Balanced Output Connector ⑭ is used for setting up with the Balanced type mixer or effect unit. If both this connector and Guitar Output Jack ⑪, the connector output only synthesizer sound. The rated output level is fixed +4dB(max.)/600Ω. Also, the output from this connector is transformless, so, to convert into unbalanced output, open the 2nd pin and use 1st and 3rd pins.
In monaural set-up, be sure to mix the output signal of the two channels with a mixer.

(3)Control Pedal

Pitch Bend function and VCF Cutoff can be controlled by using the Boss Foot Volume FV-200.

* Connect to the Output Jack of the FV-200.
* Set the Minimum Volume to zero.
* Remove the spring holder from the FV-200. (Refer to the operation manual of the FV-200 to see how to remove it)
* While not using the FV-200, unlatch it.
* You can use other Foot Volume but may find it awkward compared to the FV-200 because of the limited control range, etc.



★Outline of the GR-700★

The GR-700 is a 6 voice, fully programmable guitar synthesizer that includes Memory Capacity (RAM) of 64 different timbres.

Like a keyboard synthesizer, it consists of DCO, VCF, VCA, ENV, and LFO sections, and 32 kinds of parameters (elements) are featured to control each section. The GR-700 adopts a unique method of synthesizing, that is editing the existing patch. You are to assign any existing patch and the relevant parameter for editing. The Display Window shows the parameter number and the data value, so that you can quite easily proceed this editing operation. Moreover, it features Dynamics function that controls the DCO, VCF and VCA by the intensity of string picking, and the String Select function that allows you to select which of the strings to take on the Hold or Pitch Bender effect.

▶Four main Functions of the GR-700.

1. Recalling a preprogrammed patch from memory and play it.
2. Adding various effects to the timbre.
3. Editing the existing patch and create a new timbre.
4. Writing a patch into memory.

*Function 1 and 2 is obtainable in Play mode, 3 in Edit mode, and 4 in any mode.

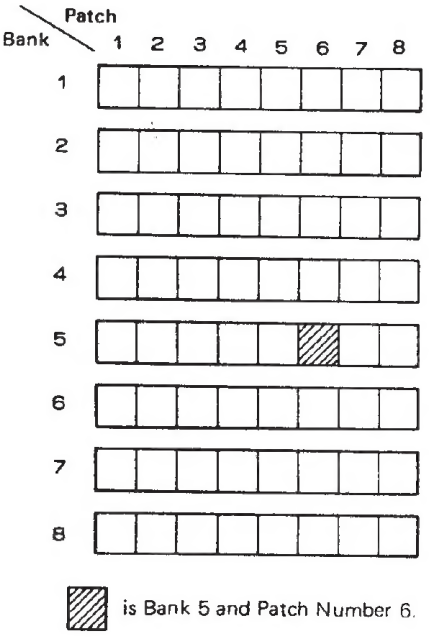
(1)Recalling a Patch

Each timbre in memory has a number (=Memory Number).

If you assign the appropriate number, the patch you want will be recalled ready to be used.

Also, proceeding Writing procedure, you can write any existing patch into memory.

The Memory Number is the combination of a Bank number (1 to 8) and a Patch Number (1 to 8). That is, each of the 8 banks has 8 patches making 64 in all.



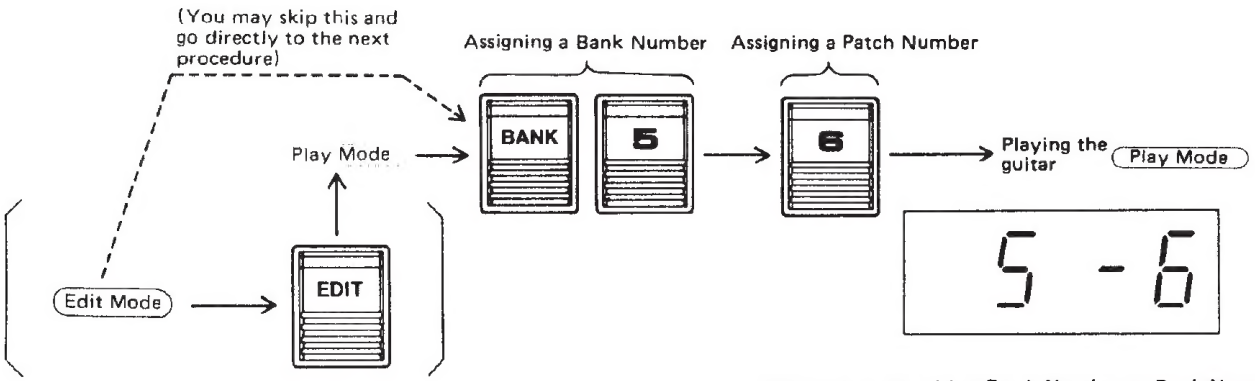
is Bank 5 and Patch Number 6.

Switching the GR-700 on will cause its Display Window to respond with 1-1 and select the Play mode. This shows that Memory Number 1-1 is ready to be played.

Number Pedal ㉔, Bank Pedal ㉕.

To assign a Memory Number, use the Bank and the Number Pedals. Pressing a Number Pedal will assign the corresponding Patch Number. To assign the Bank Number, press the Bank Pedal then appropriate Number Pedal.

Recalling a patch



* You may assign either Patch Number or Bank Number first, or even assign only one of them.

(2) Hold

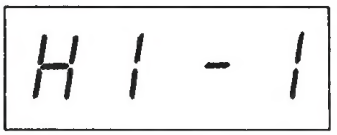
The Hold function will work on the synthesizer sound.

Pressing the Hold Pedal ㉗ will hold the sound currently in use. That is, the sound will be retained at its sustain level as long as the Pedal is depressed.

On releasing the Pedal, the sound will decay strictly in the set release time of the Envelope curve without affected by the string vibration.

Also, the Hold effect can be set for each string independently, therefore it is possible to play other string while listening to the Hold sound.

While the Pedal is being depressed, the Display Window shows 1 - 1.



(3) Guitar Controller

* Refer to the operation manual of the respective Guitar Controller to see its functions.

a. Balance

With this knob turned fully counterclockwise, only direct guitar sound is obtained. Adjust its level by using the Master Volume b and the volume knob on the amplifier. (If it is necessary, tune the strings)

As you rotate this Balance Knob clockwise, synthesizer sound will be increased and at its fully clockwise position, only synthesizer sound will be heard. (If you use two different amplifier respectively for the guitar and the amplifier, each volume can be independently set.)

b. Master Volume

This is to set the overall volume.

c. Mode Switch

With this switch set to the II or III position, both direct guitar and synthesizer sounds are available. At the I position, only direct guitar sound is obtained and the Balance knob (a) does not work. In the II mode, fairly week picking is sufficient to sound the synthesizer, but in the III mode; slightly hard picking is required.

* If using the Guiter Controller G-303 or G-808, select the position as follows.
  VCO ⇒ I
  VCO + DIST ⇒ III
  DIST ⇒ II

d. Vibrato knob and e. Touch Plate

By using these knobs, vibrato effect can be obtained. Slightly raise the Vibrato Knob (d) and touch the Touch Plate A while holding the string(s) down. To stop v.brato, touch the Touch Plate B and 'mmidiately release. If the sound has initially taken on the vibrator effect, stop it with the Touch Plate B, then do the above operations. The rate, delay time and depth of the vibrato effect work at its set level in writing. Therefore, it is necessary to have set these to appropriate levels even when you are writing a patch without vibrato effect (the LFO Modulation Switch is set to off).

* If the Vibrator Knob (d) is set to zero, no vibrato effect is obtained, therefore you are not annoyed by unexpected Vibrato effect caused by touching the Touch Plate accidentally.

f. Cutoff Frequency Knob and g. Edit Knob (Resonance in other G series)

Either of these knob works exclusively in Edit mode. The Cutoff Frequency Knob (f) is provided specifically for VCF Cutoff Frequency controlling. Edit (Resonance Knob) (g) is used to control parameters other than that.

* Refer to "(4) Edit" on the next page for the details.

(4) Edit

This Edit mode enables editing the preset tone color to your taste. The Edit function may be used as a real time performance control since it does not automatically rewrite the existing program, unless the appropriate operation for rewriting is done (refer to P. 23). Therefore, if selecting the same Patch Program later, you will hear the original tone color unchanged.

a. Edit Pedal ㉖

Depressing the Edit Pedal will turn the GR-700 into Edit mode. The Display which has been showing the Memory Number will now show the number of the Parameter you select and its data value.

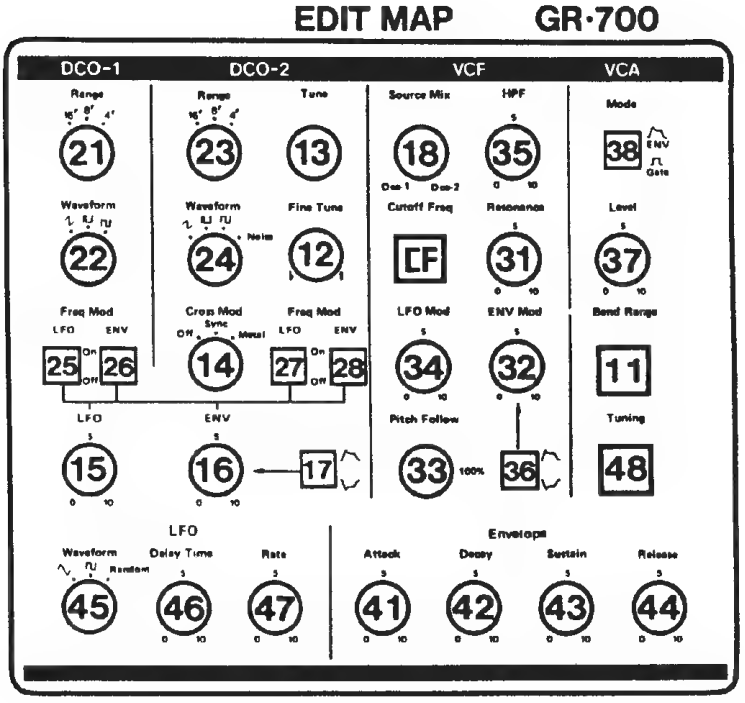
b. Selecting a Parameter

Parameters are elements that devide the tone color. The GR-700 has 32 kinds of parameters. To assign the parameter to be used, firstly find out the parameter number on the Edit Map and press the corresponding Number Pedal twice. The Parameter number is shown on the left of the Display in two figures.

c. Edit Map

The Edit Map is a rough illustration of the Synthesizer Section of the GR-700. Use this to find out the number of the parameter you are to use for editing.

*The function of each parameter and reaction of the synthesizer are explained in a table in "6 programmer" (P. 22).

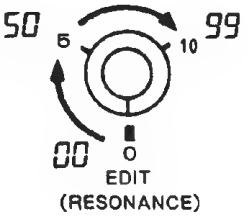


d. Setting the Data Value

Data Value of each parameter actually corresponds to the position of each knob or switch on the PG-200. (Refer to P. 23) The data value can be set with the Edit (Resonance) Knob on the Guitar Controller, and it is shown at the right of the Display in two figures. There are 3 types of indication as follows.

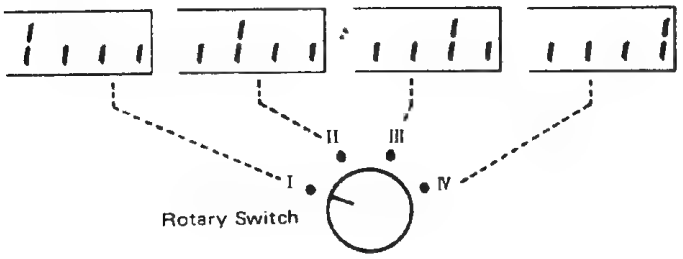
1. Volume Knob Display

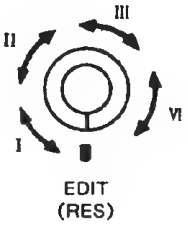
Knob position 0 → 5 → 10
Display 00 → 50 → 99



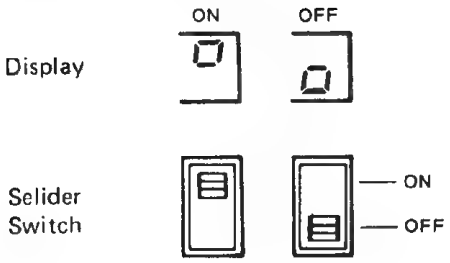
2. Rotary Switch Display

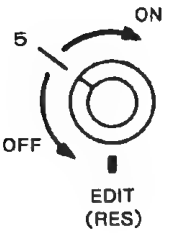
Display





3. Slider Switch Display





e. Editing Cutoff Frequency

Unlike other parameters, the Cutoff Frequency can be set simply by rotating the Cutoff Frequency Knob on the Guitar Controller. The Display will respond with "CF" during editing.

e. Completion of Editing

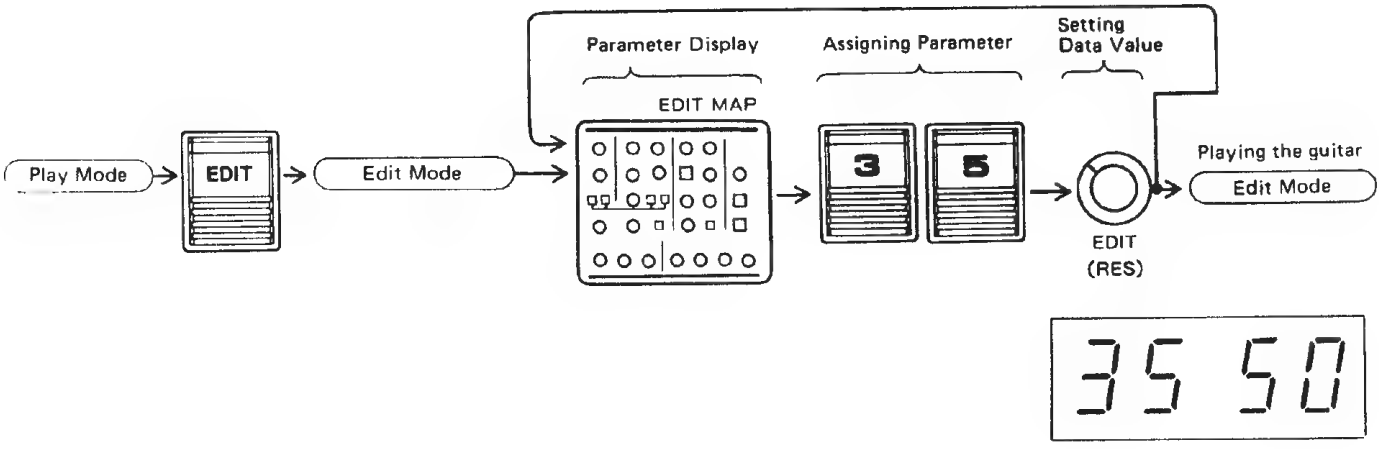
When editing is completed, "●" will be shown in the middle of the Display. At this stage, assigning a patch or pressing the Edit Pedal will turn the GR-700 to the Play mode.

■ Tuning ■

By using Parameter 48, guitar tuning can be easily done. Assign Parameter 48 and just pick any string, and you will hear the synthesizer sound (in the pitch of the open string regardless of the actual pitch). Tune your guitar with this synthesizer sound.

* If more than one string is picked at the same time, they will all sound.
* The Display shows the string number picked (or last string picked if more than one string is picked).
* The Standard pitch of the synthesizer sound is adjusted with the Tune Knob on the rear panel.

Edit



(5)Panel Switches

Panel Switches ⑰ to ㉒ can be used in any mode, that is, these can be manually controlled even during live performance. (The indicator lights when each switch is on)

The position of each knob of ⑰ to ㉒ can be written into memory by Writing procedure explained on P. 17.

a. Dynamics Switch ⑰

When this switch is on, dynamics effect can be obtained in each DCO, VCF and VCA section by picking intensity. That is, the depth of the ENV moduration on the DCO and VCF, or level of the VCA change depending on how hard you pick the string. No matter how hard you pick, there is no effect deeper or volume higher than the level set with each parameter obtained.

If the depth of each DCO and VCF is set to zero, this dynamics effect is not obtained at all, so be sure to set it to an appropriate level in editing or writing a patch.

b. String Selector Switch ⑱

Use this switch to select the string(s) on which the Voice, Hold and/or Pitch Bender function(s) work. [1] to [6] correspond to 1st to 6th strings.

VOICE — Depress this switch, then select the string(s) that is to take on synthesizer voice by pressing corresponding switch of [1] to [6].

HOLD — Depress this switch, then select the string(s) on which the Hold Pedal has its effect.

PITCH BEND — Select the string(s) on which the Pitch Bend function works.

UP / DOWN — Depress this switch, and select Up or Down mode by Up/Down Switch (the indicator lights in Up mode).

Depending whether Up or Down mode has been selected, pressing the Pedal will raise or lower the pitch.

After setting is completed, you can see whether you have set all the effects correctly as you wished, just by pressing each switch of Voice, Hold and Pitch Bend.

c. Chromatic Switch ⑲

When this is on, the scale will become chromatic (=temperament) like the keyboard's. In this mode, fairly accurate tuning is required, as the string frequency decides the scale. Also, pitch bending or glissando effect changes chromatically. (It may be a good idea to tune by using guitar and chromatic synthesizer sounds.)

d. Chorus Switch ⑳

To benefit the best possible chorus effect, use two amplifier (stereo), if possible.

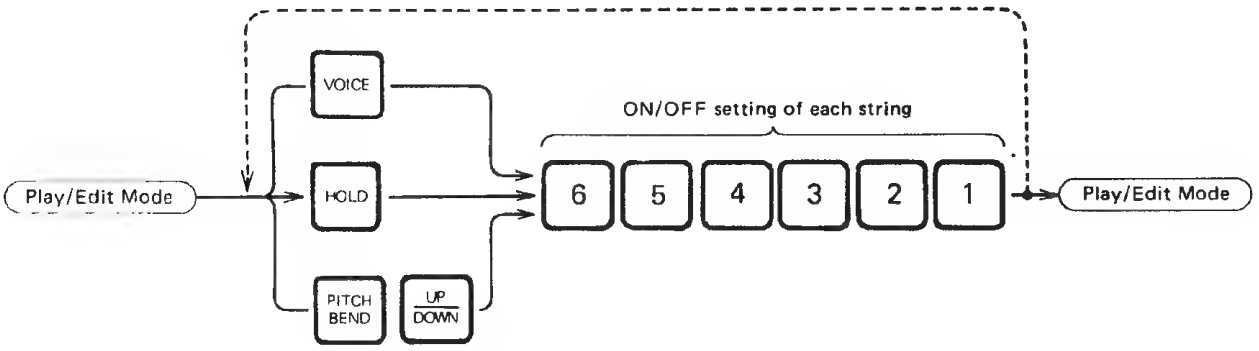
e. Memory Cartridge Switch ㉒

(Refer to P. 19)

f. Memory Write Switch ㉑

Press this switch to write a patch into memory. (Refer to P. 17)

String Selection



(6)Write

The GR-700 allows you to write the sound you have synthesized into memory.

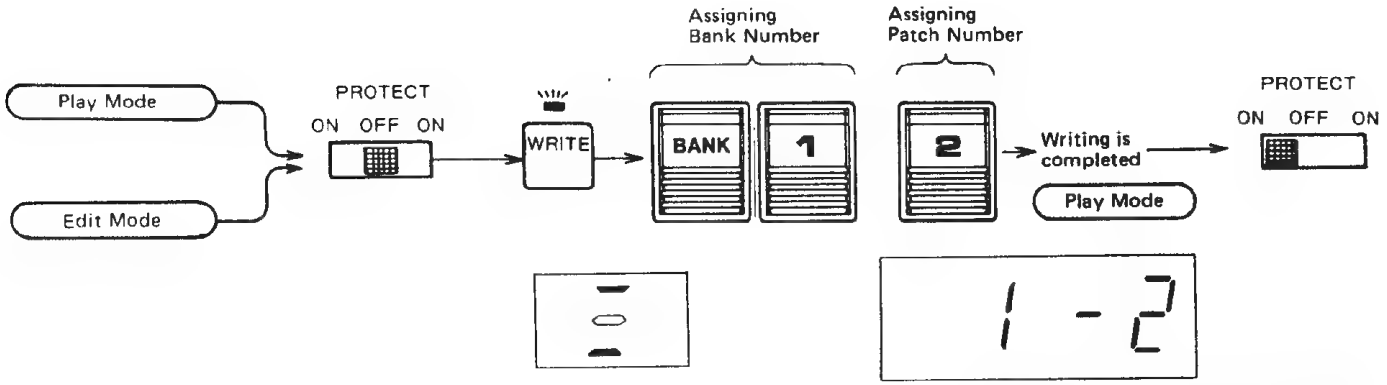
a. Memory Write Switch ㉑

Writing Procedure

1. Turn the GR-700 into Edit mode, then edit any existing patch to your taste.
2. Set the Memory Protect Switch ⑧ to OFF.
3. Press the Memory Write Switch ㉑.
   * Here, the indicator lights up and the Display shows Memory Number. (⁻₀⁻ will flash)
4. By using the Pedal Switch, assign the Memory Number. (=Bank and Patch Number)

* You do not need to assign Bank Number, if writing into the same Bank (e. g. replacing a patch with the edited one)
* You do not need to assign a wrong Bank Number, depress the Bank Pedal once again, then press the correct Number Pedal.
* The moment you have assigned the Patch Number, writing is completed, and the GR-700 is turned to Play mode.
* If the Protect Switch has been set to ON, the Display will show Prot. In such a case, set the Protect Switch to OFF, then repeat writing procedure.

Writing Patch



* If the Protect Switch has been set to ON, no writing is done and the Display will show "Protect" on, right after assigning Patch Number.

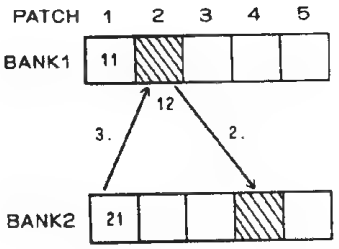
b. Rearrangement of Patches

By using the Write function of the GR-700, you can rearrange the Patches as you like.

1. Assign the Memory Number where you wish to copy the Patch.
   * Here, if you wish to retain the Patch in that Memory Number, copy it to any Memory Number that you deem not so indespensable as others. (Copy procedure is the same as write procedure).

2. Assign the Memory Number of the patch you wish to copy, and take writing procedure.

Example: Copying the Patch of Memory Number 2-1 to 1-2.

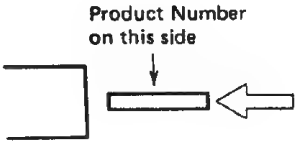


Memory Number 1-2 is the Patch you wish retain. Memory Number 2-4 is the Patch you do not mind erasing.

The supplied Memory Cartridge M-16C can be used to save the data in memory and recall it at anytime you like. That is it works just like the memory of the GR-700, retaining 64 different patches. Also, the data in the cartridge is fully supported by battery for about 5 years.

a. Memory Cartridge Slot ③

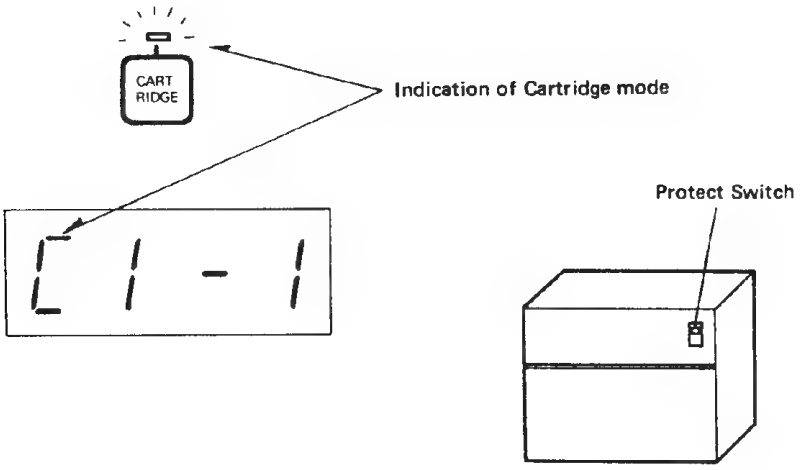
*Be sure to insert the cartridge into this slot securely as shown on the right.



b. Memory Cartridge Switch ㉒

Pressing this switch will alternately turn the GR-700 to Internal Memory and Cartridge Memory. When the GR-700 is in the Cartridge mode, the indicator lights up and the Display will show "C" on its left. All of Recall, Edit and Write functions are available by this Memory Cartridge, and the necessary operation is exactly the same as for internal.

★Even if the GR-700 is turned to Memory Cartridge mode, the patch in the internal Memory remains as it is. Therefore, it is possible to copy a patch in the Internal Memory to the Memory Cartridge or copy a patch in the Memory Cartridge into Internal Memory. In either case, it is necessary to set the Protect Switch of the Cartridge to OFF.



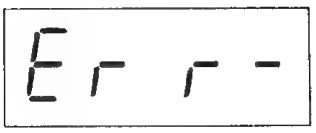
c. Copy Save Load ㉒

By using these switches, it is possible to save the entire data in the GR-700's Memory into the Cartridge and load it into internal Memory.

★Display

●Copy is completed.

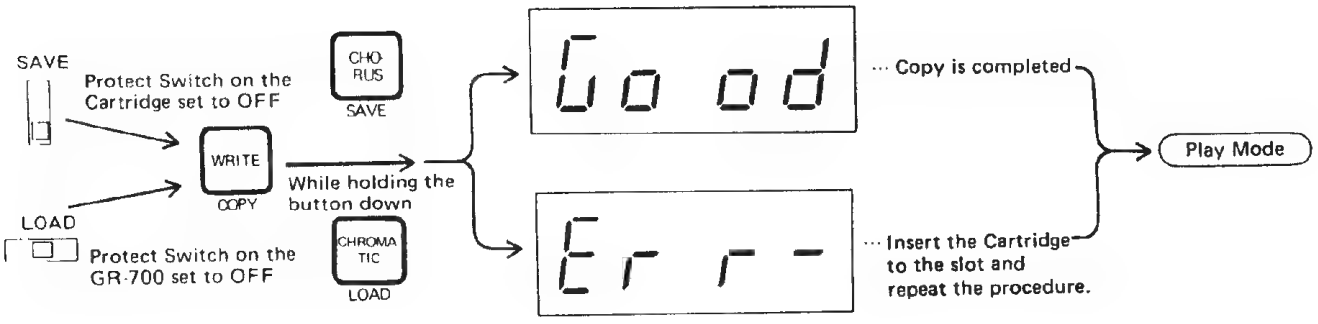
●Protect Switch is set to ON.



●Memory Cartridge is not securely inserted.

●There is something wrong with the Memory Cartridge.

Save/Load



*The above procedure will replace the existing data.

*If the Protect Switch is ON, Prot is shown and copy is impossible.

The GR-700 digitally processes the vibration of the strings producing digital signal that controls each section of the synthesizer. This is in other words, even the string vibration inaudible in usual guitar performance is processed. Therefore you may be annoyed by unexpected reaction of the guitar when playing. The following are the possible symptoms and the reasons.

1. Unstable Pitch
   - You have played a long tone with high fret, which causes very weak string vibration.
   - Right after muting.
   - You have played in Harmonics technique.

2. Correct Pitch is not obtained.
   - In playing quick phrase, the string is picked before it touches a fret.
   - You have picked the string too hard in Harmonics technique.
   - You have played in Harmonics technique.

3. Sound cannot be muted
   - You have played Tremolo or a quick phrase with the 5th and 6th strings. (These strings are likely to retain vibrations longer)
   - You have repeated an open chord or a muteless stroke.

4. Irrelevant sound is heard
   - You have touched or picked unnecessary string. (In usual guitar playing, it would not be audible.)

5. The sound is not heard
   - The vibrating time is short and the pitch is ambiguous.
   - You have not touched or picked the string hard enough.

▶If you are using the Guiter Controller other than the GR-700, the above matters may be more notable.

▶To play in chromatic, A=440Hz tuning should be strictly observed.

By using the Programmer PG-200 (Optional unit), sound synthesis of the GR-700 will be made extremely facile and quick. It features all the control knobs and switches corresponding to the parameters of the GR-700, and can be operated even distantly by using the 1.5m (5 feet) 6P DIN Cord of the GR-700.

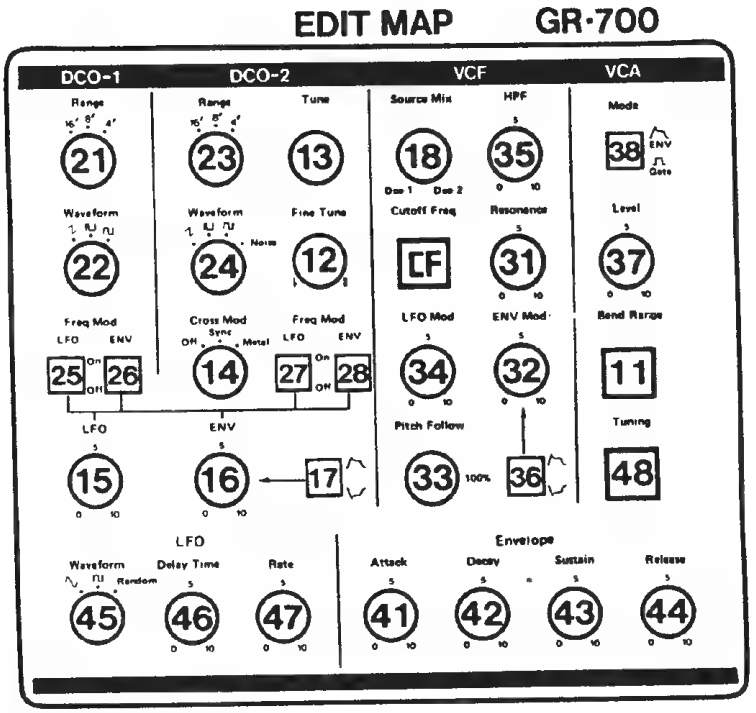
- The premier advantage of using the PG-200 is that you can edit the existing patch just by moving the controls and switches, or even make your own sound from scratch like any other synthesizer. Therefore, you are released from frustrating pedal operation. If you move a desired control even slightly, its setting position of that patch program will be deleted and ready to be manually controlled.

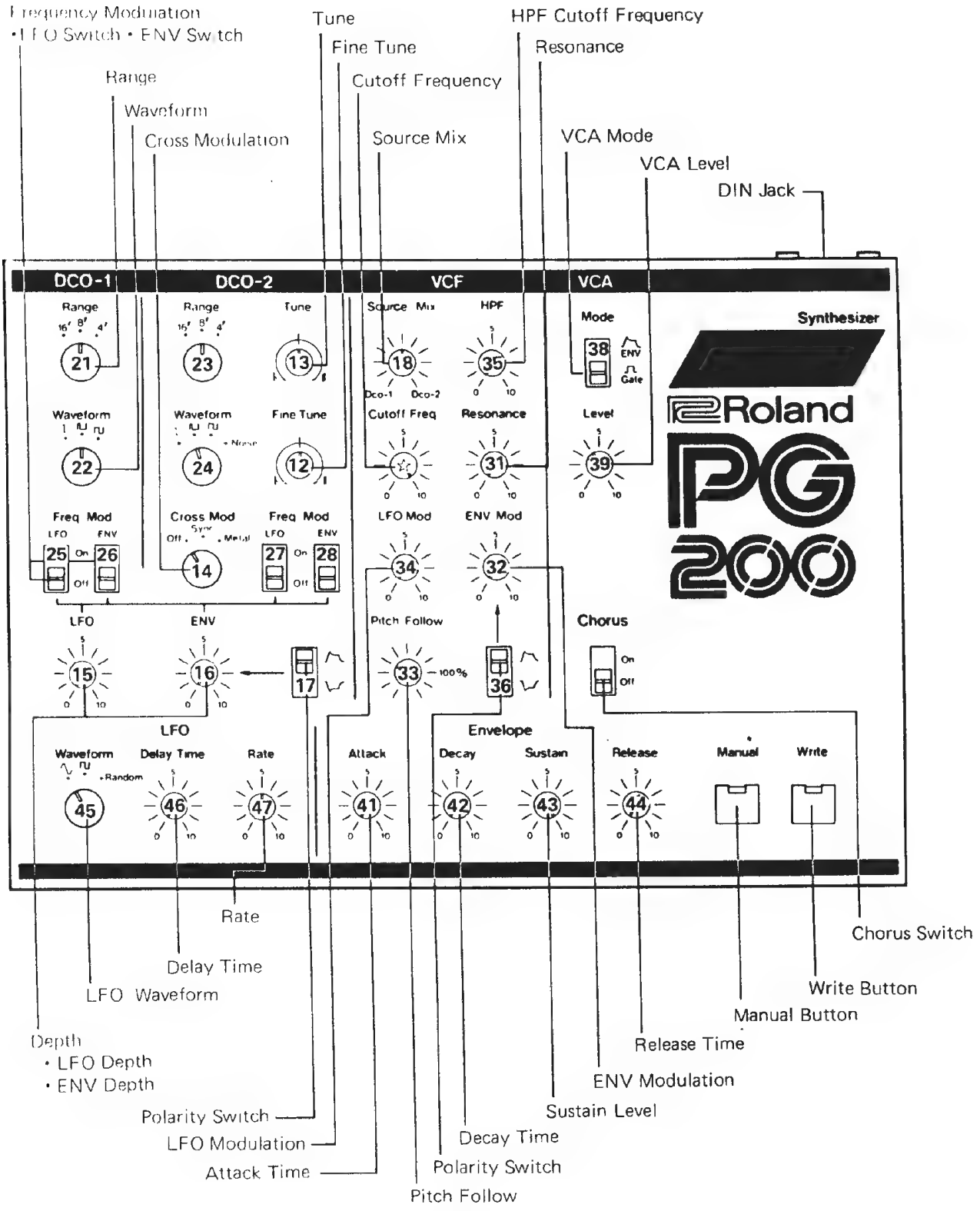
- If you depress the Manual Button on the PG-200, " ⊔⊓ " is shown in the Display and the GR-700 will be turned to usual Write mode allowing you to synthesize your own sound from scratch. That is, the existing patch has nothing to do with your sound creation. If you select a new patch in this Manual mode, the GR-700 will be turned into Play mode.

- The Write Button of the PG-200 serves just like the Memory Write Switch of the GR-700.

- The following Table shows relation between the parameters on the GR-700 and the PG-200.

■ Edit Map

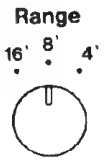
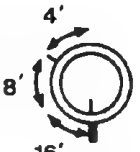
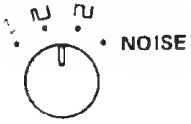
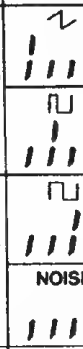
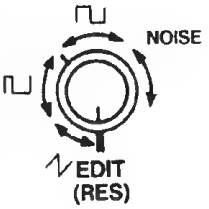
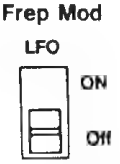
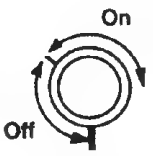
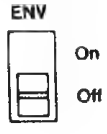


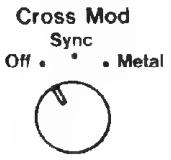
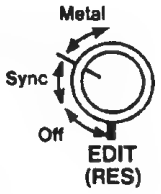
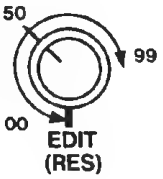
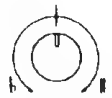
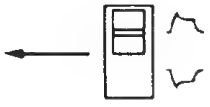


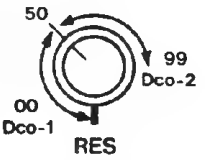
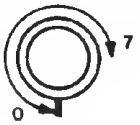
* The bottom of the PG-200 is magnetic sheet.

DCO (Digitally Controlled Oscillator)

DCO is the digitally controlled oscillator that controls the pitch and generates the waveforms that are the sound source of the synthesizers. Owing to its digitally control system, this offers superior pitch stability compared to the VCO (Voltage Controlled Oscillator).

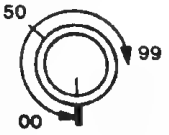
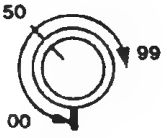
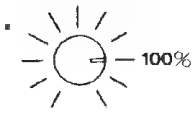
Programmer		Edit		
Parameter	Movement	Parameter Number	Data	Operation
Range 	This is to change the pitch range of the DCO in exact one octave steps from 4' to 16' (4', 8', 16'). 8' is standard.	DCO-1 21 DCO-2 23	16' 8' 4'	
Waveform 	This is to choose the output waveform of the DCO. [NOTE 1]	DCO-1 22 DCO-2 24		
Frequency Modulation (LFO switch) 	If this is set to ON, the LFO controls the frequency (pitch) of the DCO, therefore, a vibrato effect can be obtained. [NOTE 2]	DCO-1 25 DCO-2 27	On 0	
Frequency Modulation (ENV switch) 	If this is set to ON, the ENV signal controls the frequency (pitch) of the DCO.	DCO-1 26 DCO-2 28	Off 0	

Cross Modulation 	●Sync: The frequency of the DCO-2 synchronizes with that of the DCO-1, therefore, you can generate a unique waveform that is impossible to obtain if using only one DCO or two DCO's idenpendently. ●Metal: By controlling the DCO-1 with the output signal from the DCO-2, ring modulation style sound can be obtained. [NOTE 4]	14	Off Sync Metal	
Fine Tune 	The frequency (pitch) of the DCO-2 can be adjusted with this knob. ●Variable range ··· ±50 cent	12	00 ~ 99	
Tune 	This adjusts the frequency(pitch) of the DCO-2. ●Variable range ··· Approx. ±1200 cent	13		
Depth (LFO Depth) 	When the LFO output is modulating the DCO, this knob is used to adjust the depth of the modulation.	15		
Depth (ENV Depth) 	When the ENV output is modulating the DCO, this knob is used to adjust the depth of the modulation.	16		
Polarity switch 	This selects the polarity of the Envelope curve. Normally, ⌒ is used. In ⌣ mode, the ADSR patterns will be all inverted, therefore, pitch alteration, too.	17	⌒ ⌣	

Source Mix **Source Mix** 	This is to adjust the volume balance between the DCO-1 and DCO-2.	18	00 ~ 99	 At the "50" position, the volume of the DCO-1 and DCO-2 will become equal.
Bend Range (This is not included on the PG-200)	This sets the maximum range of the Pitch Bend effect by the pedal.	11	0 7	 In the DOWN mode, minus "–" will be shown in the Display.

VCF (Voltage Controlled Filter)

This is the filter to change the tone color by cutting or emphasizing harmonics. This filter, however, lets the low frequency harmonics pass and block the high frequency harmonics, and this cutoff point is controlled by voltage.

Programmer		Edit		
Parameter	Movement	Parameter Number	Data	Operation
Cutoff Frequency **Cutoff Freq** 	This sets the Cutoff Point of the VCF.			 **CUTOFF FREQ** Just rotate the knob to set the cutoff frequency.
Resonance **Resonance** 	This is to emphasize the Cutoff Point set by the Cutoff Frequency.	31	00 ~ 99	 **EDIT (RES)**
ENV Modulation **ENV Mod** 	The ENV output signal controls the VCF Cutoff Point, therefore, the Cutoff Point of the VCF in each note will be changed by the ADSR pattern previously set.	32		
Pitch Follow **Pitch Follow**  	The VCF Cutoff Point alters depending on which key is played on the keyboard. This Pitch Follow can be used to prevent any inconsistency in the harmonic content caused by pitch alteration.	33		

LFO Modulation LFO Mod 5 0 10	The LFO output signal controls the VCF Cutoff Point, therefore, a growl or wah effect can be obtained.	34	00 ~ 99	50 99 00 EDIT (RES)
HPF Cutoff Frequency HPF 5 0 10	This is to set the Cutoff Point of the HPF. * The HPF (High Pass Filter) is the filter that passes high frequency harmonics and cuts off the low frequency harmonics.	35		
Polarity Switch	This is to select the polarity of the Envelope curve. Usually ⌒ may be used. In ⌣ mode, ADSR pattern will be inverted, therefore, pitch alteration, too.	36	0 1	EDIT (RES)

VCA (Voltage Controlled Amplifier)

This is where the volume (amplitude) of the sound is controlled. Normally, it is controlled by the output voltage from the ENV.

Programmer		Edit		
Parameter	Movement	Parameter Number	Data	Operation
VCA level Level 5 0 10	This is to adjust the volume level in the writing mode. [NOTE 4]	37	00 ~ 99	50 99 EDIT (RES)
VCA mode Mode ENV Gate	This is to select whether to control the VCA by the signal from the ENV (⌒) or by the Gate signal (⊓).	38	0 1	EDIT (RES)

[NOTE 4]
Setting this VCA level too high may cause sound distortion.

LFO (Low Frequency Oscillator)

This oscillator generates extremely low frequency, so produces a vibrato or growl effect by controlling the DCO or VCF.

Programmer		Edit		
Parameter	Movement	Parameter Number	Data	Operation
LFO Waveform Waveform ∿ ⊓ • Random	This is to select the LFO output waveform.	45	∿ ⊓ Random	Random EDIT (RES)
Delay Time Delay Time 5 0 10	This sets the time needed for the modulation by the LFO to start.	46	00 ~ 99	50 99 00 EDIT (RES)
Rate Rate 5 0 10	This sets the rate (frequency) of the LFO.	47		

The rate, delay time and depth of the vibrato effect work at its set level in writing. Therefore, it is necessary to have set each parameter in this LFO Mod Section to appropriate level even when you are writing a patch without vibrato effect (the LFO Moduration Switch is set to off).

Chorus

This is to produce rich and expansive sounds.

Programmer		Edit
Chorus Chorus On Off	If this is turned on, a chorus effect is obtained.	Use the Chorus Switch to turn the effect on or off. CHO RUS

This generates the control voltage (CV) which controls the VCF and VCA, therefore, alters the tone color and volume in each note.

Programmer		Edit		
Parameter	Movement	Parameter Number	Data	Operation
Attack Time **Attack** 5 0 10	This determines the time required for the voltage to reach its maximum from the moment the key is pressed down.	41	00 ~ 99	50 99 00 RES
Decay Time **Decay** 5 0 10	This determines the time required for the voltage to drop from the maximum to the sustain level.	42		
Sustain Level **Sustain** 5 0 10	This sets the sustain level to which the voltage falls at the end of the decay time.	43		
Release Time **Release** 5 0 10	This sets the time needed for the voltage to reach zero.	44		

*When all the ADSR are set to zero, the waveform will be an extremely short pulse wave, and only a short "click" is heard.

MIDI (Musical Instrument Digital Interface) is international standard that enables communication of units by digital signal.

The GR-700 includes MIDI Out Jack allowing the setup with the unit featuring MIDI In. Thus, the external sound source will be played by the Guitar.

Information sent from the MIDI Out of the GR-700 are as follows.

(a) Keyboard Information
(Key ON/OFF, Dynamics)

(b) Hold
(Hold Pedal ON/OFF)
HOLD ON B0H, 40H, 7FH
HOLD OFF . . . B0H, 40H, 00H

(c) Patch Selections
(Information corresponding to Memory Numbers)
11 ~ 88 : 0 ~ 63
= 00H ~ 3FH.
C11 ~ C88 : 64 ~ 127
= 40H ~ 7FH.

(d) Mode Message
(OMNI Mode OFF/POLY Mode ON Message)
B0H, 7CH, 00H/B0H, 7FH, 00H

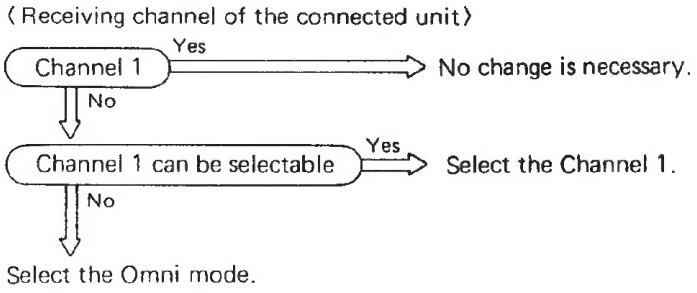
Regarding the Keyboard Information (a), because the pitch is chromatic scale, Pitch Bend effect will be chromatic, too. (An Envelope Curve is generated in every half note.)

● Selecting MIDI Information

The GR-700 is able to send the information (a) to (c), but switching the GR-700 will automatically selects merely Keyboard Information (a). If you need (b), switch the unit on while holding the String Selector Switch [1] and if needing (c), hold the [2] Switch down, also for Mode Message (d), the [3] Switch. (If you need all information (b), (c) and (d), hold both [1], [2] and [3]).

● MIDI Channel

MIDI System includes two types of units, one has its own channel number, and the other allows to freely set it. The MIDI Channel Number of the GR-700 is fixed "1". So the unit used with the GR-700 should also have Number "1".



GR-700
●6 Voice Programable Guitar Synthesizer

● Internal Memory
64 Patch Programs, Battery Back-up
(16K bite RAM)

● External Memory
Memory Cartridge (M-16C)

● Edit
32 Parameters
(By using a Guitar Controller)

■ Front Panel
● Pedal Switches
Number Pedal (1~8)
Edit Pedal
Hold Pedal

● Panel Switches
Dynamics Switch (DCO, VCF, VCA)
String Selector Switch (VOICE, HOLD, PITCH BEND-UP/DOWN 1~6)
Chromatic/Load Switch
Chorus/Save Switch
Memory (Cartridge/Copy, Write) Switch

■ Display Window
Memory: Bank Number
Patch Number
Edit: Parameter
Date
(4 figure (1 inch) 7 Segment LED)

■ Rear Panel
● Jacks
Output Connector: 2
(XLR/0 dB, 600Ω)
Output Jack (STEREO/MONO): 2
(Standard/0 dB, 5 kΩ)
Guitar Output Jack: 1
(Standard/−20 dB, 1kΩ)
Pedal Jack: 1
(FV-200)
PITCH Pedal Jack: 1
(FV-200)
MIDI Output Connector: 1
(5P-DIN)
Programmer In: 1
(6P-DIN)
Guitar Input Controller: 1
(C-24D STD)
Memory Cartridge Slot: 1
(Specifically for M-16C)
AC In

● Controls & Switches
Output Level Control
(H: 0dB, M: −15dB, L: −30dB)
Memory Protect Switch (ON/OFF)
Tune Knob (±50 cents)
Power Switch

■ Power Consumption: 20W

■ Dimensions
690(W) x 375(D) x 155(H) mm
27 3/16(W) x 14 3/4(D) x 6 1/8(H) in.

■ Weight: 12 kg/26 lb. 7oz.

■ Accessories
Connection Cable (LP-25): 2
Connection Cable (C-24D): 1
(6P DIN/1.5m): 1
AC Cord: 1
Memory Cartridge (M-16C): 1
Owner's Manual: 1

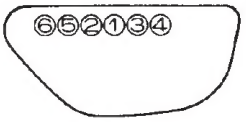
■ Options
Programmer PG-200
Foot Volume FV-200
Memory Cartridge M-16C
Carrying Case

★Adjusting the output level of the Guitar Controller.

If you use the G-Series Guitar Controller other than the G-707, or to change the gauge of the strings in using G-series, you may have to readjust the output level of the Guitar Controller. Try setting it to the desirable level with the Volume Adjust VR.

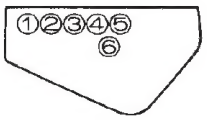
* Please be sure that you are not adjusting the irrelevant VR.
* This level adjustment is a delicate task, so please do it in slight steps.
* The height of the devided pickup (the distance from the string) is related with the output level, so adjust it, too. Remove the cover on the back of the guitar body and place the body with the Connector at the lower right to obtain proper sight.

● G-202



Output level increases

● G-303、808

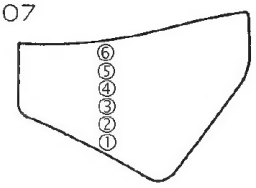
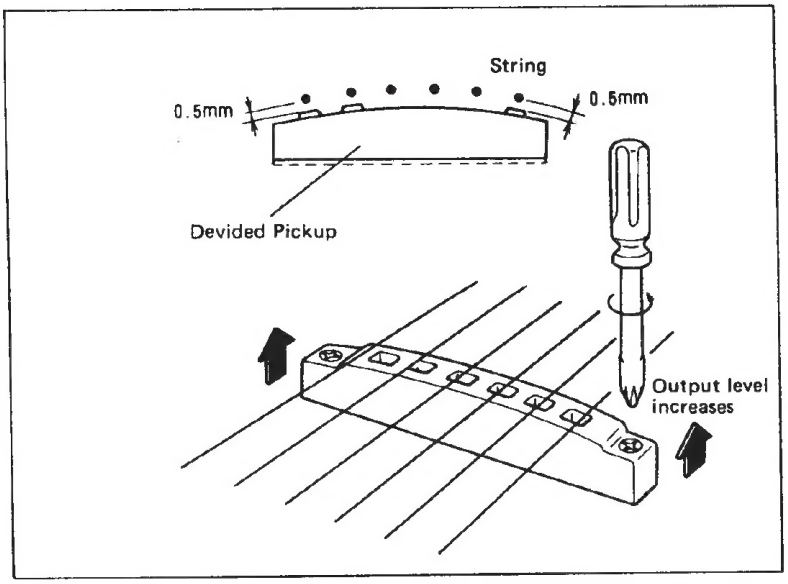


Output level increases

● G-505

Output level increases

● G-707



Output level increases